

WHAT IS CLAIMED IS:

1. A communication apparatus for sending and receiving data by electromagnetic waves, comprising:

electromagnetic wave generating means for forming a radio frequency (RF) field by generating electromagnetic waves;

modulating means for sending data at one of a plurality of transmission rates by modulating electromagnetic waves; and

demodulating means for demodulating electromagnetic waves so as to acquire data sent from other apparatus at one of the plurality of transmission rates,

wherein data for requesting an identification (ID) to identify the other apparatus is sent,

the ID sent from the other apparatus in reply to the request for the ID is acquired,

data that includes the ID of the other apparatus is sent as the data for the other apparatuses after acquiring the ID of the other apparatus, and

data for requesting the ID is sent again if the ID of the other apparatus has not been properly acquired.

2. The communication apparatus according to Claim 1, wherein the data for requesting IDs is sent again if the IDs

are simultaneously received from a plurality of other apparatuses or if any overlapping IDs are received from the plurality of other apparatuses.

3. A communication method for sending and receiving data by electromagnetic waves, comprising:

an electromagnetic wave generating step for generating electromagnetic waves to form a radio frequency (RF) field;

a modulating step for modulating electromagnetic waves to send data at one of a plurality of transmission rates; and

a demodulating step for demodulating electromagnetic waves to acquire data transmitted from other apparatus at one of the plurality of transmission rates,

wherein data for requesting identification (ID) to identify the other apparatus is sent,

the ID sent from the other apparatus in reply to the request for the ID is acquired,

data that includes the ID of the other apparatus is sent as the data for the other apparatus after acquiring the ID of the other apparatus, and

data for requesting the ID is sent again if the ID of the other apparatus has not been properly acquired.

4. A communication apparatus for sending and receiving

data by electromagnetic waves, comprising:

modulating means for modulating electromagnetic waves to send data at any one of a plurality of transmission rates; and

demodulating means for demodulating electromagnetic waves to acquire data sent from other apparatus at any one of the plurality of transmission rates,

wherein, when data for requesting the ID for identifying itself is received from the other apparatus, its ID is generated using a random number and the generated ID is sent,

when data for requesting the ID is received again from the other apparatus, its ID is generated again by using a random number and the re-generated ID is sent again, and

data that includes the ID of itself among the data sent from the other apparatus is received as the data for itself.

5. The communication apparatus according to Claim 4, further comprising electromagnetic wave generating means for forming an RF field by generating electromagnetic waves,

wherein the modulating means sends data by modulating the electromagnetic waves output from the electromagnetic wave generating means.

6. The communication apparatus according to Claim 4,

wherein the modulating means sends data by load-modulating the electromagnetic waves generated by the other apparatus.

7. A communication method for sending and receiving data by electromagnetic waves, comprising:

a modulating step for modulating electromagnetic waves to send data at one of a plurality of transmission rates; and

a demodulating step for demodulating electromagnetic waves to acquire data sent from other apparatus at one of the plurality of transmission rates,

wherein, when data for requesting the ID for identifying itself is received from the other apparatus, its ID is generated using a random number and the generated ID is transmitted,

when data for requesting ID is received again from the other apparatus, its ID is re-generated by using a random number and the re-generated ID is transmitted again, and

data that includes its ID among the data sent from the other apparatus is received as the data for itself.